PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Restore Habitat Within Dredge Tailings On The Yankee Fork Salmon River

BPA project number: 20017
Contract renewal date (mm/yyyy): ☐ **Multiple actions?**

Business name of agency, institution or organization requesting funding
Shoshone-Bannock Tribes, Idaho Department of Fish and Game, U.S. Forest Service

Business acronym (if appropriate) SBT, IDFG, USFS

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses
7.6A.1, 7.6A.2, 7.6B.3, 7.6C.5, 7.8A.2, 7.8D.1

FWS/NMFS Biological Opinion Number(s) which this project addresses
Biological assessment for chinook salmon in the Yankee Fork Section 7 Watershed (USDA 1995)

Other planning document references
Watershed Analysis Approaches Using Chinook Salmon, Yankee Fork of the Salmon River, Idaho: An Example (Overton & others In review); Challis National Forest Land and Resource Management Plan (USDA 1987); Identified as primary population group for the mainstem Salmon River from Lemhi to Yankee Fork in the Final Snake River Recovery Plan (NMFS, in review). Salmon Subbasin FY99 DAIWP Objectives 1 - 4.

Short description
Restore natural hydraulic and sediment regimes, restore floodplain and riparian function, expand available chinook salmon and steelhead spawning and rearing habitat, connect the West Fork Yankee Fork and Yankee Fork Salmon River priority critical reaches

Target species
Snake River spring/summer chinook salmon, Snake River summer steelhead, bull trout, westslope cutthroat trout

Section 2. Sorting and evaluation

Subbasin
Salmon River

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
☒ Anadromous fish ☒ Resident fish ☒ Wildlife	☒ Multi-year (milestone-based evaluation) ☒ Watershed project evaluation	☐ Watershed councils/model watersheds ☐ Information dissemination ☒ Operation & maintenance ☒ New construction ☒ Research & monitoring ☒ Implementation & management ☐ Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Identify and assess the status of key physical and biological elements in the Yankee Fork watershed.	a	Finalize Watershed Assessment for the Yankee Fork of the Salmon River.
1		b	Use remote sensing technology to identify impediments to natural upslope, riparian, and hydraulic processes.
2	Restore natural hydraulic and sediment regimes, and floodplain and riparian	a	Eliminate and redistribute dredge tailings as necessary from floodplain of the Yankee

	function to the Yankee Fork Salmon River		Fork of the Salmon River as an impediment to natural hydraulic processes.
2		b	Evaluate the current road configuration as it relates to floodplain function.
3	Expand available chinook salmon and steelhead spawning and rearing habitat	a	Increase natural sinuosity of river channel by providing access to floodplain.
4	Connect West Fork Yankee Fork and Yankee Fork Salmon River priority critical reaches for chinook salmon	a	Allow natural hydrograph, including floodplain and riparian function, to establish connectivity with suitable habitat. This may involve passive (shift in landuse management activities) or active restoration (inchannel, watershed, or riparian restoration)
5	Provide for upslope stability	a	Bring riverbed back up to grade where necessary using dredge tailings material.
6	Provide for long-term benefits for water quality, fish, and wildlife.	a	Develop agreements and/or easements with private parties to assure long-term protection of resources is provided for.
6		b	Use videography/remote sensing for future monitoring.

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1999	10/2000		x	15.00%
2	7/2000	10/2007		x	50.00%
3	7/2001	10/2007			10.00%
4	7/2001	10/2007			10.00%
5	7/2001	10/2007			10.00%
6	3/1999	10/2007			5.00%
				Total	100.00%

Schedule constraints
The goal for FY00 is to complete the Watershed Assessment, remote sensing analysis, road and archaeological surveys, and a pilot study. Limitations could include NEPA and ESA compliance, permitting, easements, and available work window.

Completion date
2007

Section 5. Budget

FY99 project budget (BPA obligated):

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel	Salary for Project Manager (1 FTE)	%24	50,000
Fringe benefits	34% of Salary	%8	17,000
Supplies, materials, non-	Aerial videography, thematic mapper	%2	4,500

expendable property	imagery		
Operations & maintenance	Pilot restoration	%24	50,000
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		%0	
NEPA costs		%0	
Construction-related support		%0	
PIT tags	# of tags:	%0	
Travel		%2	4,000
Indirect costs	28% of salary and fringe	%9	18,760
Subcontractor	USFS sub. for geomorphologist, remote sensing analysis, archaeol., and road relocation engineering.	%28	59,000
Other	Vehicle lease	%2	4,000
		TOTAL BPA FY2000 BUDGET REQUEST	$207,260

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
		%0	
		%0	
		%0	
		%0	
		Total project cost (including BPA portion)	$207,260

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	$900,000	$500,000	$500,000	$500,000

Section 6. References

Watershed?	Reference
☒	U.S. Department of Agriculture (USDA). Forest Service. 1995. Biological assessment for chinook salmon in the Yankee Fork Section 7 watershed. Challis National Forest.
☒	U.S.D.A. Forest Service. 1987. Forest land and resource management plan for the Challis National Forest and EIS.
☐	Northwest Power Planning Council. 1994. Columbia River Basin Fish and Wildlife Program. Northwest Power Planning Council, Portland, OR.
☐	Davidson, D. F., and J. Osbourne. 1976. Soil and water resource inventory of the west half of the Challis National Forest. Challis National Forest.
☒	Overton, C. K., M. A. Radko, and R. Brannon. In Review (a). Watershed analysis approaches using chinook salmon, Yankee Fork of the Salmon River: An example. General Technical Report RMRS-XXX. U.S. Department of Agriculture, Forest Service, Rocky Moun
☒	Overton, C. K., R. Brannon, and J. S. Gebhards. In Review (b). Subbasin assessment and conservation restoration plan for chinook salmon and bull trout in the upper Salmon River subbasin, Idaho: An example. General Technical Report RMRS-XXX. U.S. Depar
☐	Lee, D. C., J. R. Seddell, B. E. Rieman, R. F. Thurow, and J. E. Williams. 1997. Broadscale assessment of aquatic species and habitats. In T. M. Quigley and S. J. Arbelbide (eds). An

	assessment of ecosystem components in the interior Columbia River Ba
☐	U.S. Government, Federal Register. (57 FR 14653). Listing of Snake River fall chinook and Salmon River spring/summer chinook salmon as threatened. April 22, 1992. Washington, D. C., 57:14653.
☐	U.S. Government, Federal Register. (59 FR 42529). Reclassification of Snake River fall chinook and Salmon River spring/summer chinook as endangered. August 18, 1994. Washington, D. C., 59:42529.
☐	McKinney, S. P. and E. Calame. 1994. North Fork John Day Dredge Tailing Restoration Project. Aqua-Talk, U.S. Forest Service R-6 Fish Habitat Relationship Technical Bulletin No. 5, Portland, OR.
☐	Saffel, P. D., H. Hayball, K. Bacon, and M. Rowe. 1996. Salmon River Habitat Enhancement. 1995 Annual Report. Project No. 94-50, Fort Hall, ID.
☐	U.S. Department of Commerce (USDC). National Oceanic and Atmospheric Administration (NOAA). National Marine Fisheries Service (NMFS). In Review. Final recovery plan for Snake River Salmon.

PART II - NARRATIVE

Section 7. Abstract

Approximately six miles of stream habitat on private land on the Yankee Fork Salmon River have been severely altered by dredge-mining, eliminating much of the natural meander pattern of the stream and associated instream habitat and riparian vegetation. The altered stream corridor consists of unconsolidated and unvegetated dredge tailings, which have increased sedimentation of spawning gravels and rearing pools. The mainstem Yankee Fork has downcut causing upslope instability in many tributary streams. The goal of the Yankee Fork Dredge Tailings Restoration project is to restore natural hydraulic and sediment regimes by redistributing dredge tailings piles from the floodplain. Restoring the Yankee Fork Salmon River, historically a major chinook salmon producer, to natural conditions will create a healthy, functioning riparian community providing numerous benefits to fish and wildlife. As part of the project, an ongoing Watershed Assessment will be completed prior to on-the-ground work. The methods used for construction will follow those of BPA Project 9605300, North Fork John Day Dredge Tailings Restoration, redistributing tailings piles and bringing the river back up to grade when necessary. Expected outcomes include a healthy, functioning floodplain and riparian community, an increase in spawning and rearing habitat for salmonids, an increase in instream habitat diversity, and upslope stabilization. Time frame for the project would be a maximum of eight years, with annual construction implemented through the year 2005. Monitoring and evaluation will be based on Watershed Assessment recommendations. M&E commitments will be minimal, as this can be accomplished with existing agency (USFS, IDFG) and Tribal personnel.

Section 8. Project description

a. Technical and/or scientific background

The Yankee Fork watershed is located in central Idaho in the Upper Salmon River Basin. The watershed is approximately 49,202 ha in size and is encompassed entirely within the Salmon-Challis National Forest (USDA 1995). The Yankee Fork drains approximately 360 km of perennial stream from its headwaters to the confluence with the Salmon River, and 468 km of seasonally intermittent tributaries. Elevations range from 814 m above sea level at its Salmon River confluence to more than 3,000 m on several mountain peaks. The Yankee Fork receives approximately 76 cm of precipitation annually (Davidson and Osbourne 1976). The Yankee Fork was primarily formed through extensive volcanic activity occurring 45 to 50 million years ago in central Idaho. The streamflow regime of streams within the

Yankee Fork watershed are typical of the mountainous regions of Idaho. Peak flows occur from late May to June during spring snowmelt, while baseflows occur from late summer through February (USDA 1995).

The Yankee Fork, one of the larger watersheds within the upper Salmon River, historically was a major salmon producer. Large stream size, diversity of habitats, availability of low gradient stream channel reaches, aquatic productivity, and a remnant spawning and rearing population, make the Yankee Fork a potential major chinook drainage within the upper Salmon River subbasin. (Overton & others, *In review (a)*).

Snake River stocks of chinook salmon have used the Yankee Fork and its tributaries for spawning and rearing long before human settlements entered the watershed. Every summer the Bannock Tribe would camp at the mouth of Ramey Creek to harvest spawning salmon. Because of the strong historical populations, habitat capability must have been high to support the different species' life histories. More recently, Snake River chinook salmon populations have suffered direct mortality associated with the operation of dams on the Columbia River and the lower Snake River. In addition, habitat degradation, introduction of exotics, hatchery supplementation, and instream flow diversions have induced additive pressures on the population as a whole. Due to the decline of this species, Snake River spring/summer salmon were listed under the Endangered Species Act as threatened on April 22, 1992 (57 FR 42529), and the Yankee Fork is classified as critical habitat (57 FR 14653). Until passage problems are resolved, the resiliency and persistence of remaining wild chinook salmon stocks will be largely dependent on the quality and diversity of remaining stream habitats (Lee et.al. 1997). All remaining populations and habitats for chinook salmon are critical to the persistence and recovery of this species. The proposed project is located in an area severely altered by human activity and is degraded to a level that even if mainstem migration impediments were reversed, little habitat would remain to support a viable spawning population of natural chinook salmon without implementation.

In 1938 a large dredge was constructed on the Yankee Fork and operated from 1939 through 1942 by the Silas Mason Company. After World War II, the dredge was reactivated and operated until 1952. It was estimated that $11 to $12 million worth of gold was extracted (market value at the time of mining) from approximately six miles of the mainstem Yankee Fork Salmon River and the lower 1.5 miles of Jordan Creek. As a result of the extensive dredge mining, a complete rechanneling of lower portions of the Yankee Fork has occurred along with the deposition of extensive unconsolidated dredge piles. This section of the river has been widened and the channel straightened compared to pre-dredging conditions. The substrate has been severely altered and is now dominated by boulder and cobble with few spawning gravels. The historic floodplain can no longer be accessed and the natural riparian zone has been severely altered.

Following dredge mining, the Yankee Fork road was rebuilt over the dredge tailings. This road is the primary public thoroughfare to the Yankee Fork drainage, and provides access for popular seasonal recreational activities, and also to the jointly-administered USFS and State of Idaho "Land of the Yankee Fork" State Park and Historical Area established for the interpretation of historic mining in this area of Idaho. The road also provides access to an on-going large-scale open pit gold mine and to private holdings and residences within the drainage.

In accordance with the Fish and Wildlife Program goals (NPPC 1994), this project will protect and improve habitat conditions in the Yankee Fork Salmon River, thus benefiting the biological needs of salmon, steelhead, bull trout, and other fish and wildlife species. Implementation of State, Federal, and Tribal habitat improvements is called for, and this project is jointly sponsored by all three entities. This project will also involve cooperative habitat protection and improvement with private landowners, as the proposed work area is primarily on private land. This project is addressing the Final Snake River Salmon Recovery Plan (NMFS, in review), as it will be protecting and restoring important habitat on federal lands, and protecting a watershed that contains high quality habitat and habitat that can be readily restored. This proposed action is supported by the Final Snake River Salmon Recovery Plan (NMFS, in review), the watershed assessment (Overton & others, in review (a)), the Upper Salmon River Subbasin Plan (Overton & others, in review (b)), the Biological Assessment for chinook salmon in the Yankee Fork Section 7 watershed (USDA 1995), the NMFS biological opinion for chinook salmon in the Yankee Fork Section 7

watershed (1995), and as addressed in Section 7 of the Columbia River Basin Fish and Wildlife Program (NPPC 1994).

Thousands of kilometers of western streams have been severely altered by dredge mining for gold. This project will be similar to an ongoing BPA project (# 9605300, North Fork John Day River Dredge Tailings Restoration) where channel structure was returned to a pre-dredged condition at the project site following the redistribution of over 6,000 cubic yards of tailings. Allowing the river access to the floodplain, the water and energy is dissipated emulating the natural condition of the river system, with chinook salmon utilizing the newly redistributed substrate to construct redds weeks after completion (McKinney and Calame 1994).

b. Rationale and significance to Regional Programs

The Columbia River Basin Fish and Wildlife Program recognizes that improvements in habitat quality are needed to increase the productivity of many stocks of chinook salmon (NPPC 1994). The Yankee Fork chinook salmon stock is in jeopardy of going extinct in the near future unless survival through the migration corridor on the Snake and Columbia Rivers can be improved, as well as improvements in habitat quality and quantity in the Yankee Fork watershed itself. The Yankee Fork Dredge Tailings Restoration project will restore over six miles of river to a natural, pre-mining condition. Redistributing tailings piles from the floodplain will allow the river to access its historic floodplain, which has not occurred since dredging was completed in 1942. By allowing natural processes to again function in the watershed, this project will provide for a healthy stream and riparian community. A healthy, functioning stream and riparian community will provide numerous benefits to fish and wildlife and water quality, as well as to other users of the resource.

This project will directly address several measures in the Fish and Wildlife Program (NPPC 1994). Measure 7.6A.1 calls for coordination of human activities on a comprehensive watershed management basis, and we intend to do exactly that. Measure 7.6A.2 calls for improved productivity of salmon and steelhead habitat critical to the recovery of weak stocks. The Yankee Fork has been designated as critical habitat (57 FR 14653), and the stock at this time is extremely depressed and on the verge of extinction. This project will improve habitat productivity by providing a healthy, functioning stream and riparian community. Measure 7.6B.3 gives priority to habitat projects that have been integrated into broader watershed improvement efforts and that promote cooperative agreements with private landowners. This project will use a Subbasin Assessment to guide project activities, and as most of the affected areas are on private land, a cooperative agreement will be essential to the success of the project. Measure 7.6B.4 calls for giving priority to actions that maximize the desired result per dollar spent, and to actions that have a high probability of succeeding at a reasonable cost. This project is modeled after a highly successful and cost-effective restoration project (North Fork John Day River Dredge Tailings Restoration, 9605300) and we expect similar results. Measure 7.6B.6 encourages involvement with volunteers and educational institutions in cooperative habitat enhancement projects. This project will involve the Shoshone-Bannock High School through their streamside incubator project on the Yankee Fork, and also the Challis High School through their Living Stream Classroom Project. Measure 7.6C.5 calls for federal land and water management agencies, states, tribes, and private landowners to take all steps necessary to comply with the habitat objectives. By providing a healthy, functioning stream and riparian community, this project will improve sediment regimes, bank stability, water quality, large woody debris, large pool frequency, riparian vegetation, stream morphology, and riparian areas compared to current conditions. Measure 7.8A.2 charges federal land managers to initiate actions needed for recovery when the habitat objectives are not being met. The USFS has provided the framework for this project by initiating the Watershed Assessment which will be used to guide the restoration effort, and also the relocation of the road which also affects riparian and riverine function. Measure 7.8D.1 charges parties to identify and protect riparian and underwater lands associated with perennial and intermittent streams and to initiate actions to increase shade, vegetation, standing and down large woody and small woody debris when water quality objectives are not being met. The affected six-mile area of the Yankee Fork Salmon River has no functional floodplain, and is currently listed by the State of Idaho as being a water quality limited segment, and restoring it will accomplish the above listed objectives. The project will use non-structural methods whenever possible to allow the river to function as a river.

This project will be similar to an ongoing BPA project (9605300, North Fork John Day River (NFJD) Dredge Tailings Restoration). Ed Calame, the engineer responsible for the project has already provided considerable information for this proposal, and we intend to retain him as a consultant for this project if possible. Reports, knowledge, and information generated from the NFJD project has provided, and will continue to provide, guidance for this project. This project also intends to define and develop technological tools, knowledge, and expertise to assist in designing cost-effective restoration strategies to improve fish habitat and stream-riparian environments.

This project will be a cooperative effort between agencies, tribes, private parties, and local interest groups, and a broad base of support will be essential to the success of the project. By using a comprehensive and broad-based watershed approach, this project will ensure that all affected parties will have input into the implementation phase. The project will be very important to the survival of chinook salmon and steelhead in the Yankee Fork Salmon River, and would be a good investment of rate-payer monies by the BPA.

c. Relationships to other projects

The Shoshone-Bannock Tribes currently have two ongoing BPA-funded projects involved with the Yankee Fork Salmon River. The Salmon River Habitat Enhancement Project (9405000) has created off-channel rearing ponds for juvenile chinook salmon and steelhead and samples the ponds and mainstem Yankee Fork annually to estimate juvenile abundance, habitat use, and adult escapement. The Salmon Supplementation Studies in Idaho Rivers Project (8909803) also samples the West Fork Yankee Fork as one of the control streams in the study. This project also compliments other USFS restoration efforts that are identified in the Yankee Fork Watershed Assessment (Overton & others, *In review*) for improving watershed processes and the stream-riparian function (i.e., road realignment, grazing strategies, etc...). Data generated by these projects will be used to monitor chinook salmon and steelhead trends during and after the construction phase is completed. The project will also continue restoration efforts initiated by private parties in the watershed which involved restoration of 0.5 miles of stream riparian habitat previously degraded by dredging on Jordan Creek, a tributary to the Yankee Fork.

This project is a collaborative effort involving the Shoshone-Bannock Tribes, the Idaho Department of Fish and Game, the United States Forest Service Yankee Fork Ranger District and Rocky Mountain Research Station, and private landowners. All parties wish to see this project succeed, and manpower and equipment will be made available as necessary to ensure it does. Once funded, we intend to hire a full-time program manager to administer the contract. This position will be a joint coop position with the Tribes and the USFS Yankee Fork Ranger District. This person will oversee the day-to-day operation of the project and be responsible for obtaining all required permits, easements, consultations, etc... necessary for the project to operate. Permits and consultations necessary will include: 1) Idaho Department of Water Resources permit to alter a stream channel; 2) U.S. Army Corps of Engineers permit programs under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act; 3) Consultations with State Historic Preservation Office and effected Tribes; 4) Complete NEPA analysis; and 5) Consultation with NMFS and USFWS. Sub-contracts with the USFS Rocky Mountain Research Station will be initially utilized to complete the remote sensing work necessary to properly plan and implement the project. Private consultants may be hired as necessary to provide additional input and information.

Other parties that may be involved in the project include the Idaho Model Watershed Project (BPA Project No. 9401700) and the Custer County Watershed Group. Both of these parties are concerned with improving fish habitat in the Salmon River Basin and could provide valuable input to this project in terms of soliciting more private interest involvement in the project.

d. Project history (for ongoing projects)

(Replace this text with your response in paragraph form)

e. Proposal objectives

I. Identify and assess the status of key physical and biological elements in the Yankee Fork watershed.

II. Restore natural hydraulic and sediment regimes, and floodplain and riparian function to the Yankee Fork Salmon River.

III. Expand available chinook salmon and steelhead spawning and rearing habitat.

IV. Connect West Fork Yankee Fork and Yankee Fork Salmon River priority critical reaches for chinook salmon.

V. Provide for upslope stability.

VI. Provide for longterm benefits for water quality, fish, and wildlife.

Products resulting from this project will include: 1) continued cooperative efforts and working relationships between agencies, tribes, private parties, and local governments: relationships developed by the Idaho Model Watershed Project (BPA Project # 9401700); and 2) development of cost-effective technical tools to assist project design, monitoring, and future habitat restoration projects.

f. Methods

An objective of this proposal is to develop cost-effective technical tools to assist in project design and monitoring. We propose using large-scale videography in conjunction with GIS to assist in determining the current channel-riparian configuration. This spatial coverage would then be used to design the desired stream channel characteristics (i.e., channel shape and dimensions, floodplain and riparian areas), and to monitor changes over time. We will also integrate satellite imagery to identify and assess key watershed areas effecting ecological function (e.g., roads and slope instability) and to provide baseline data for the watershed for future monitoring. The refinement of these methods could provide future techniques for cost-effective assessment, designs, and monitoring of similar watershed-stream restoration projects.

Methods to meet Objective 1:

The Yankee Fork Watershed Assessment example (Overton & others, in review (a)) identified and determined key physical and biological elements for restoration of aquatic and riparian resources. This project would further identify elements through completion of a Watershed Assessment as outlined in the Federal Guide for Watershed Analysis, and would restore fragmented and degraded aquatic habitat. This would be a benefit by meeting FWP objectives as are cited in Section 7.C of this proposal.

Methods to meet Objectives 2-4:

Aerial videography and linkage to GIS to develop spatial coverages of existing stream riparian area and condition.

Broad scale satellite imagery to identify key watershed areas that most directly effect riparian function.

Use of fluvial geomorphologists, hydrologists, and fish biologists to define the desired channel configuration, floodplain, and riparian area.

Develop a stream channel restoration design from above tasks to be used in a multi-year channel restoration project to rework the current dredged channel area, and to relocate the Yankee Fork road out of the active floodplain.

Restoration of natural floodplain function will be accomplished through the reconstruction of the natural floodplain strata disturbed by past mining activities using heavy equipment. Gravel and cobble tailing piles well be used to fill depressions in the floodplain following removal of built-up fine sediments. These sediments will then be used to cover the leveled tailings for recovery of natural riparian vegetation in the floodplain.

Methods to meet Objective 5:

Reestablishment of the original bed elevations and floodplain of the main Yankee Fork is expected to reduce the continual headward migration of the stream channel. This should reduce channel scour and bedload transport from the tributaries.

Methods to meet Objective 6:

An easement or land exchange with private landowners (i.e., J. R. Simplot Company) to protect the integrity of the restoration project will be necessary to ensure longterm benefits from this project. Aerial videography and satellite imagery will be used to monitor riparian and upslope conditions.

g. Facilities and equipment

Major construction equipment for the project will be leased and will be adequate for the job and will meet all local, state, and federal contract specifications. Construction equipment may include but not be limited to bulldozers, front-end loaders, excavators, and dump trucks. Office space and equipment will be provided at the Shoshone-Bannock Tribes Fisheries Department and the Salmon and Challis National Forest's Yankee Fork Ranger District. Special equipment purchases will include: 1) a laser level to accurately determine gradients, slopes, and channel cross-sections pre- and post-construction; and 2) a leased 4X4 vehicle to be utilized by the Project Manager.

h. Budget

Salary for the Project Manager ($50,000), fringe benefits of 34% of salary ($17,000), and indirect cost of 28% of salary and fringe ($18,760) combine for a total of $85,760 for personnel costs. Supplies needed include aerial videography and thematic mapper imagery to provide spatial coverages of existing riparian and watershed conditions and will cost $4,500. Travel for the Project Manager to perform fieldwork and attend meetings/workshops will be approximately $4,000, and the lease of a 4X4 vehicle for use by the project manager will be approximately $4,000. Subcontracts will include a geomorphologist from the USFS to design desired channel configuration ($5,000), remote sensing analysis to be done by the USFS ($8,000), an archaeological survey to be completed by the USFS for NEPA purposes ($16,000), and engineering work to relocate the road out of the active floodplain ($30,000) for a total of $59,000. A small pilot project will also be completed in FY2000 on USFS land at a cost of $50,000.

Section 9. Key personnel

A qualified individual will be hired as a Project Manager, and will be selected by a panel from cooperating parties for this project (SBT, IDFG, and USFS). This person shall have experience in fisheries, hydrology or related fields, and experience in managing stream restoration projects. Possible consulting work will include agency fisheries biologists, hydrologists, geomorphologists, remote sensing experts, and civil engineers. Ed Calame, project coordinator on the N.F. John Day Dredge Restoration Project has expressed an interest in assisting with consulting on this project, and his experience will be utilized as much as possible.

Section 10. Information/technology transfer

Information/technology transfer will be provided through published annual reports, presentation at annual American Fisheries Society and other related professional society meetings, and project interpretive signing at the project site to educate the public.

Congratulations!